

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 January 2005 (13.01.2005)

PCT

(10) International Publication Number
WO 2005/003671 A1

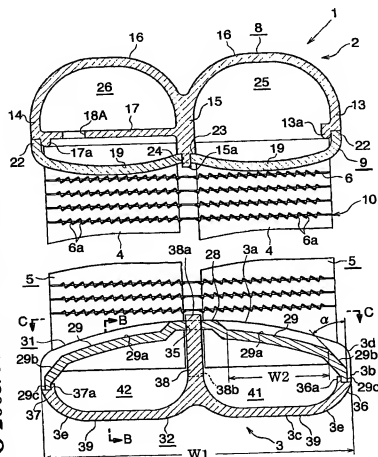
- (51) International Patent Classification²: F28F 17/00,
F25B 39/02, F28F 9/02
- (21) International Application Number:
PCT/JP2004/010070
- (22) International Filing Date: 8 July 2004 (08.07.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
2003-272039 8 July 2003 (08.07.2003) JP
60/486,899 15 July 2003 (15.07.2003) US
- (71) Applicant (for all designated States except US): SHOWA
DENKO K.K. [JP/JP]; 13-9, Shiba Daimon 1-chome, Mi-
nato-ku, Tokyo 1058518 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HIGASHIYAMA,

Naohisa [JP/JP]; C/o Showa Denko K.K., Oyama Re-
gional Office, 480, Inuzuka 1-chome, Oyama-shi, Tochigi
3238678 (JP). WATANABE, Sumitaka [JP/JP]; C/o
Showa Denko K.K., Oyama Regional Office, 480, In-
uzuka 1-chome, Oyama-shi, Tochigi 3238678 (JP).
YAMAUCHI, Shinobu [JP/JP]; C/o Showa Denko
K.K., Oyama Regional Office, 480, Inuzuka 1-chome,
Oyama-shi, Tochigi 3238678 (JP). MORI, Daisuke
[JP/JP]; C/o Showa Denko K.K., Oyama Regional Office,
480, Inuzuka 1-chome, Oyama-shi, Tochigi 3238678 (JP).

- (74) Agents: HIBI, Norihiko et al.; C/o Kishimoto & Co., 3rd
Floor, Inaba Building, 13-18, Nishishinbashi 1-chome,
Chuo-ku, Osaka-shi, Osaka 5420086 (JP).
- (81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG,

[Continued on next page]

(54) Title: EVAPORATOR



(57) Abstract: An evaporator 1 comprises a heat exchange core 10 comprising a plurality of tube groups 5 arranged in rows as spaced forwardly or rearwardly of the evaporator and each comprising a plurality of heat exchange tubes 4 arranged in parallel at a spacing laterally of the evaporator, and a lower tank 3 disposed at a lower end of the core 10 and having connected thereto lower ends of the heat exchange tubes 4 providing the tube groups 5. The lower tank 3 has a top surface 3a, front and rear opposite side surfaces 3b and a bottom surface 3c. The lower tank 3 is provided in each of front and rear opposite side portions thereof with grooves 29 formed between respective laterally adjacent pairs of heat exchange tubes 4 and extending from an intermediate portion of the top surface 3a with respect to the forward or rearward direction to the side surface 3b for causing water condensate to flow therethrough. Each of the grooves 29 includes a first portion 29a existing on the top surface 3a of the lower tank and having a bottom face which is gradually lowered from the intermediate portion of the top surface 3a toward a front or rear side edge thereof. The evaporator 1 can be diminished in the quantity of water condensate that will collect on the top surface 3a of the lower tank 3.

WO 2005/003671 A1

SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— with international search report

- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,